REMARKS

Status of the Claims

Claims 1-34 are pending in the application, Claims 1 and 12 having been amended to more clearly define the present invention, and Claim 4 and Claim 19 having been amended to correct typographical errors and Claims 14, 23, and 31 having been amended to clarify which independent claim includes step (b) through step (d) that are to be respectively carried out in Claims 14, 23, and 31.

Claims Rejected under 35 U.S.C. § 102(b)

The Examiner has rejected Claims 1-34 as being anticipated by Reed et al. ("Improving the Aircraft Design Process Using Web-Based Modeling and Simulation," ACM Transactions on Modeling and Computer Simulation, Vol. 10, No. 1, January 2000, hereinafter referred to as "Reed"). The Examiner asserts that Reed describes each element of applicant's claimed invention. Applicant respectfully disagrees for the reasons noted below.

In the interest of reducing the complexity of the issues for the Examiner to consider in this response, the following discussion focuses on independent Claims 1, 12, 19, and 29. The patentability of each dependent claim is not necessarily separately addressed in detail. However, applicant's decision not to discuss the differences between the cited art and each dependent claim should not be considered as an admission that applicant concurs with the Examiner's conclusion that these dependent claims are not patentable over the cited references. Similarly, applicant's decision not to discuss differences between the prior art and every claim element, or every comment made by the Examiner, should not be considered as an admission that applicant concurs with the Examiner's interpretation and assertions regarding those claims. Indeed, applicant believes that all of the dependent claims patentably distinguish over the references cited. However, a specific traverse of the rejection of each dependent claim is not required, since dependent claims are patentable for at least the same reasons as the independent claims from which the dependent claims ultimately depend.

Discussion of the Rejection of Independent Claim 1

Significant differences exist between Claim 1 and Reed. For example, Reed does not appear to teach or suggest applicant's claim recitation of enabling a user to evaluate the design by interactively simulated flying of the aircraft. Also, Reed does not teach or suggest generating aerodynamic *coefficients*.

LAW OFFICES OF RONALD M. ANDERSON
600 - 108th Avenue N.E., Suite 507
Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314

Applicant's Step (d) in Claim 1

The Examiner has asserted that Reed discloses applicant's step (d) that originally recited "enabling the user to evaluate the flight characteristics of the design by simulated flying of the aircraft within a flight simulation program using the plurality of flight model data files." The Examiner cited page 66, lines 1-5 and page 78, lines 22-26 of Reed in support of his assertion.

The portions of Reed to which the Examiner cited in support of his assertion are reproduced below:

> A dynamically-defined, run-time **simulation executive** is included to control **complex, multi-level simulations**. A persistence engine, capable of transparently accessing geometry and data stored in either relational or object database management systems is included. (Emphasis added, Reed, page 66, lines 1-5.)

> 4.2.7 *Engine-Aircraft Model Integration.* The systems integrator, working with the model and component authors, performs a **series of simulations** to evaluate and improve the performance of the first-order engine model. Component conceptual models are refined and new software components developed, deployed and integrated, until all preliminary engine design requirements are satisfied. (Emphasis added, Reed, page 78, lines 22-27.)

Although not necessary to distinguish over Reed, applicant has amended step (d) to recite "enabling the user to evaluate the flight characteristics of the design by interactive, simulated flying of the aircraft within a flight simulation program using the plurality of flight model data files, wherein said interactive, simulated flying of the aircraft enables the user's evaluation to be substantially based on a point of view of a pilot flying the aircraft." The amendment makes it even clearer that unlike Reed, the user is evaluating the aircraft design by "flying" the aircraft and is perceiving the flying characteristics of the design in a manner substantially similar to what a real pilot piloting the aircraft design would experience if actually flying the design. Thus, applicant has clarified that the simulation in applicant's claim is that of a "hands on" interactive flying simulation where the user interacts with the flight simulation program to pilot the aircraft design, as if the user were in the cockpit of the aircraft. The flight simulation program approximates what a pilot would perceive during an evaluation of design when making a test flight of actual aircraft design.

Applicant's Steps (b) and (c) in Claim 1

The Examiner has asserted that Reed discloses applicant's step (b) and (c). In its entirety, step (b) (emphasis added) recites "processing the plurality of parameters *to generate a plurality of*

LAW OFFICES OF RONALD M. ANDERSON
600 - 108th Avenue N.E., Suite 507
Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314

aerodynamic coefficients that define a flight model for the design of the aircraft. The Examiner has cited page 60 lines 32-37 of Reed in support of his assertion. In its entirety, applicant's step (c) recites "producing a plurality of flight model data files that include: (i) *the aerodynamic coefficients generated*; and (ii) selected parameters input by the user." The Examiner has cited page 65 lines 35 through 41 of Reed in support of his assertion.

However, contrary to what the Examiner indicates, Reed does not teach or suggest that aerodynamic **coefficients** are generated. The Examiner has not indicated which elements in the citation to Reed that the Examiner believes are equivalent to applicant's claim recitation of generating aerodynamic coefficients. Indeed, it does not appear Reed teaches or suggests this step. Instead, it appears that Reed discloses aerodynamic analysis of the airframe by computing wing and fuselage lift and drag.

> The design of an aircraft is an inherently complex process. Traditional preliminary design procedure decomposes the aircraft into isolated components (airframe, propulsion system, control system, etc.), and focuses attention on the individual disciplines (fluid dynamic, heat transfer, acoustics, etc.) which affect their performance. The normal approach is to perform disciplinary analysis in a sequential manner where one discipline uses the results of the preceding analysis (see Figure 1). In the development of commercial aircraft, aerodynamic analysis of the airframe is the first step in the preliminary design process. Using the initial Computer-aided Design (CAD) geometry definitions resulting from the conceptual design studies, aerodynamic predictions of wing and fuselage lift and drag are computed. Key points in the flight envelope, including take-off and normal cruise, are evaluated to form a map of aerodynamic performance. (Emphasis added, Reed, page 60, lines 31-43.)

It must be emphasized that computing wing and fuselage lift (L) and drag (D) produces values that are different than wing and fuselage aerodynamic *coefficients* (such as Cl and Cd) for the wing and body, as applicant recites in this claim.

Reed also discusses classes and interfaces that are cable of housing the analytical and geometric views of the various aircraft components in the citation that is produced below:

> A set of object classes and interfaces for representing the **physical attributes** and topology of aircraft system is included. These classes comprise an object-oriented *component architecture* capable of housing the **analytical** and **geometric views** of the various aircraft components employed in the design process. The architecture facilitates and ensures object interoperability among separately developed software components.
>
> A *visual assembly interface* is included for graphical creation and manipulation of aircraft system models. It enables users to establish model design, control model

LAW OFFICES OF RONALD M. ANDERSON
600 - 108th Avenue N.E., Suite 507
Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314

execution and visualize simulation output. (Emphasis added, Reed, page 65, lines 34-42.)

The Examiner has not indicated which elements in the above citation from Reed that the Examiner believes are equivalent to applicant's claim recitation of generating aerodynamic coefficients. In any case, applicant further notes that "physical attributes" of an aircraft system, for example, maximum gross weight of the airplane; number of engines per wing; and wing, vertical tail, and horizontal stabilizer areas are not equivalent to aerodynamic coefficients that have been generated from the processing of a plurality of parameters, as recited in applicant's step (b). Nor are "analytical ... views of the various aircraft components" equivalent to aerodynamic coefficients that have been generated. The citation to Reed does not define what an analytical view includes, but taking into account the context in which this phrase is used, it appears that "view" is some sort of drawing and is not equivalent to aerodynamic coefficients, which are a specific type of data.

Thus, the rejection of independent Claim 1 over Reed should be withdrawn, at least because Reed neither teaches nor suggests applicant's claim recitation of: (1) interactive simulated flying; and (2) generation of aerodynamic coefficients. Because dependent claims include all of the elements of the independent claim from which the dependent claims ultimately depend, dependent Claims 2-11 are patentable for at least the reasons discussed above in regard to independent Claim 1. Accordingly, the rejection of dependent Claims 2-11 under 35 U.S.C. § 102(b) should also be withdrawn.

Discussion of the Rejection of Independent Claim 12

Independent Claim 12 recites a method for enabling a user to create or modify a design for an aircraft and evaluate flight characteristics of the design as created or modified by the user. The Examiner has rejected independent Claim 12 for the same reasons for his rejection of independent Claim 1. However, for reasons similar to those given in conjunction with the patentability of independent Claim 1, Reed does not disclose or suggest applicant's claim limitation in step (b) of generating a plurality of aerodynamic coefficients. In addition, applicant has amended step (d) to clarify that the simulation in applicant's invention is that of a "hands on" simulation where the user interacts with the flight simulation program, as if the user were in the cockpit of the aircraft.

Thus, the rejection of independent Claim 12 over Reed should be withdrawn. Because dependent claims include all of the elements of the independent claim from which the dependent

LAW OFFICES OF RONALD M. ANDERSON
600 - 108th Avenue N.E., Suite 507
Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314

claims ultimately depend, dependent Claims 13-18 are patentable for at least the reasons discussed above in regard to independent Claim 12. Accordingly, the rejection of dependent Claims 13-18 under 35 U.S.C. § 102(b) should be withdrawn.

Discussion of the Rejection of Independent Claim 19

Independent Claim 19 recites a system for enabling a user to create or modify a design for an aircraft and evaluate flight characteristics of the design. The Examiner has rejected independent Claim 19 for the same reasons applied in his rejection of independent Claim 1. However, for reasons similar to those presented above in connection with traversing the rejection of independent Claim 1, it will be apparent that Reed does not disclose or suggest applicant's claim recitation in subparagraph (d)(ii) of generating a plurality of aerodynamic coefficients. Furthermore, note that applicant's subparagraph (d)(iv) recites (with emphasis added), "enabling a user to evaluate the flight characteristics of the design by simulating flying of the aircraft ***interactively*** in ***response to graphic images on the display***, ***responsive to controls*** and ***commands provided by the user*** with the input device, wherein the flight characteristics of the design simulated during flying are based upon the plurality of flight model data files." However, aside from an amendment to correct a typographical error in the claim language, applicant has not amended this language as was done in Claim 1, to clarify that the simulation in applicant's invention is that of a "hands on" simulation where the user interacts with the flight simulation program, as if the user were a pilot in the cockpit of the aircraft. Such an amendment is not necessary, because Claim 19 already recites language that distinguishes over Reed. Specifically this portion of Claim 19 already provides that the user is enabled to evaluate the flight characteristics of the design "...interactively in response to graphic images on the display, responsive to controls and commands provided by the user with the input device." Accordingly, it will be apparent that Claim 19 clearly defines a simulation where the user is enabled to "fly" the aircraft and evaluate its characteristics as if the user were the real pilot in the cockpit of the actual aircraft design. Reed does not teach or suggest this interactive simulation as a way to evaluate any design.

Thus, the rejection of independent Claim 19 over Reed should be withdrawn. Because dependent claims inherently include all of the elements of the independent claim from which the dependent claims ultimately depend, dependent Claims 20-28 are patentable for at least the reasons

LAW OFFICES OF RONALD M. ANDERSON
600 - 108th Avenue N.E., Suite 507
Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314

discussed above in regard to independent Claim 19. Accordingly, the rejection of dependent Claims 20-28 under 35 U.S.C. § 102(b) should be withdrawn.

Discussion of the Rejection of Independent Claim 29

Independent Claim 29 is directed towards a system for enabling a user to create or modify a design for an aircraft and evaluate flight characteristics of the design. The Examiner has rejected independent Claim 29 for the same reasons for his rejection of independent Claim 1. However, for reasons similar to those given in conjunction with the patentability of independent Claim 1, Reed does not disclose or suggest applicant's claim limitation in step (d)(ii) of generating a plurality of aerodynamic coefficients. Furthermore, note that applicant's step (d)(iv) recites with emphasis added, "enabling the user to evaluate the flight characteristics of the design by simulating flying of the aircraft interactively in response to graphic images on the display and controls and commands provided with the input device, using the flight model data."

However, similar to independent Claim 19, note the claim recitation provides "interactively in response to graphic images on the display and controls and commands provided with the input device, using the flight model data," which thus clearly defines Claim 29 as a simulation where the user is enabled to "fly" the aircraft and evaluate the design as if the user were the real pilot in the cockpit of the actual aircraft.

Thus, the rejection of independent Claim 29 over Reed should be withdrawn. Because dependent claims inherently include all of the elements of the independent claim from which the dependent claims ultimately depend, dependent Claims 30-34 are patentable for at least the reasons discussed above in regard to independent Claim 29. Accordingly, the rejection of dependent Claims 30-34 under 35 U.S.C. § 102(b) should be withdrawn.

In view of the Remarks set forth above, it will be apparent that the claims in this application define a novel and non-obvious invention. The application is in condition for allowance and should be passed to issue without further delay. Should any further questions remain, the Examiner is invited to telephone applicant's attorney at the number listed below.

Respectfully submitted,

Sabrina K. MacIntyre
Registration No. 56,912

LAW OFFICES OF RONALD M. ANDERSON
600 - 108th Avenue N.E., Suite 507
Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314

SKM/RMA:cai

MAILING CERTIFICATE

I hereby certify that this correspondence is being deposited with the U.S. Postal Service in a sealed envelope as first class mail with postage thereon fully prepaid addressed to: Commissioner for Patents, Alexandria, VA 22313-1450, on November 6, 2005.

Date: November 6, 2005 Christine A. Ives

LAW OFFICES OF RONALD M. ANDERSON
600 - 108th Avenue N.E., Suite 507
Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314